TyrePal
www.tyrepal.co.uk

Tyre Pressure Monitoring System

TC215

User manual

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 TC215E 20130319

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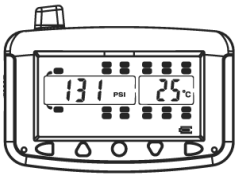
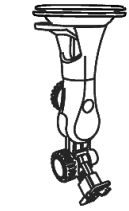
1. SYSTEM COMPONENTS

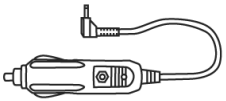
1.1 Monitor and accessories



Monitor



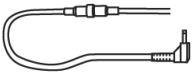
Monitor holder



Power adapter

Monitor stand

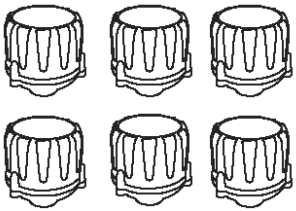
Bracket



Power lead

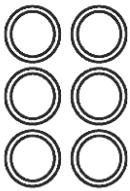
1.2 Sensors

The system is compatible with different types of TyrePal TC215 sensors. This manual is based on the standard external sensors, but your system may contain a different type which will be described in supplementary sheets.



Sensors with security shrouds

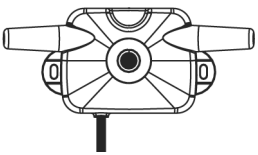
Wrench



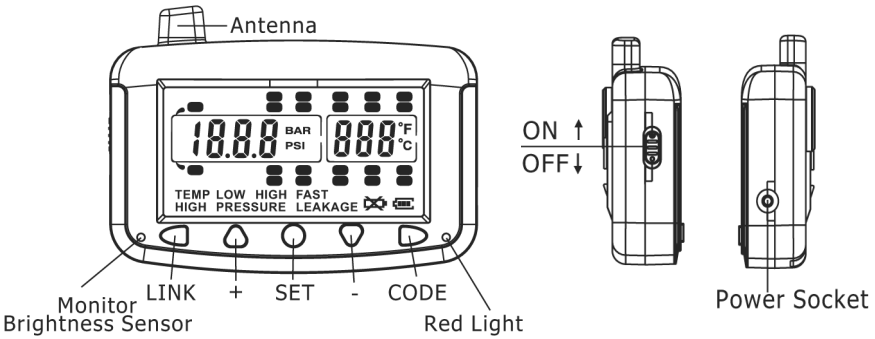
Spare O-rings

1.3 Optional components

The system may be supplied with optional parts such as a Smart Transceiver. This is used to extend the range of the sensor signals and can also store trailer settings to simplify exchanging trailers in a fleet.



1.4 Monitor layout and controls



1.5 Screen icons

Tyre position icon

Monitor battery icon (fully charged) (requires charging)

Sensor low battery icon

2. IMPORTANT SAFETY NOTES

The TyrePal system can help you maintain tyre pressures for safety, fuel economy, tyre life and environmental impact.

It is your responsibility to ensure that it is suitable for your particular vehicle and that it is working correctly and properly maintained. Check the sensors and valve stems regularly, as some road salts can cause corrosion.

The system does not replace the need to carry out regular checks on the condition and wear of the tyres.

Keep the small parts and especially the batteries out of the reach of children. If a battery is swallowed, consult a doctor. Do not hold a battery with metallic tweezers as it will cause a short circuit and may lead to burning or explosion of the battery.

3. BEFORE INSTALLATION

Before installing the system, ensure that it is suitable for your vehicle.

- Check that the operating pressure of your tyres is within the range of the system. i.e. 0 - 13bar (0-188psi).
- Check that tyre valve stems are in good condition before fitting the sensors. We do not recommend using the system with aluminium valve stems.
- Do not fit sensors to tyres that have been treated with internal tyre sealant. The sealant may damage the sensor or impair its action.
- To avoid danger of damage to the sensors, check that sensor valve caps will remain within the outside profile of the tyres when fitted.

If the distance from the rear wheels to the monitor is greater than about 7 metres, we recommend the use of a TyrePal Smart Transceiver to increase the range of the sensors and improve the stability of the system.

3.1 Wheel balancing

For heavy vehicles, the weight of the sensors is within the tolerance achieved for wheel balancing, so there is usually no need for the wheels to be rebalanced after installing the system. Lighter vehicles such as passenger cars are more sensitive to wheel balance, so if vibration is felt when driving at speed after fitting the system, the wheels must be re-balanced.

3.2 Battery charging

The monitor is powered from an internal rechargeable battery that may need to be charged before first use. A full charge will last for about 60 hours. **It should only be charged using the supplied cigarette lighter lead or wired into the 12-24V system.**

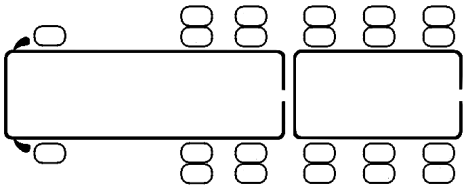
4. INSTALLATION

4.1 Install and register the sensors

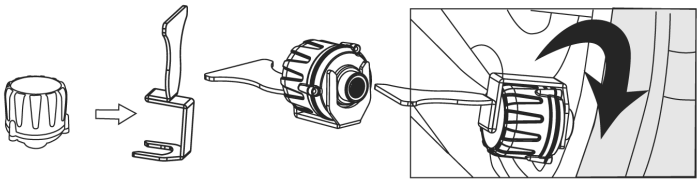
Sensors are interchangeable and can be registered to any of the 22 possible wheel positions. Once sensors are registered, the display only shows data from the registered positions.

The following procedure registers the sensors as they are installed. If preferred, they can be registered without installing them on the vehicle; see the alternative registration procedure described on the next page.

1. Label each sensor to identify its position. The numbers can be recorded here:



2. In standby mode, press and hold the **CODE** button for 3 seconds. Release it after the beep to enter coding mode. A flashing tyre icon is displayed. If no sensor is registered to this position, the letters FFF FFF are shown. If a sensor is already registered, the sensor ID is shown.
3. Press the **+** or **–** button to select the desired tyre position.
4. Screw the sensor onto the tyre valve using the security tool as shown. The system allows different types of sensor to be specified. If appropriate, instructions for alternative sensors are detailed in supplementary sheets.



5. As it senses the air pressure, the sensor sends its ID code to the monitor. The monitor beeps and stores the tyre position with that sensor ID. If it does not register within a few seconds, unscrew the sensor and try again.
6. Press **+** or **–** buttons to select the other tyres and repeat for all the tyres that are to be monitored.

7. If you need to delete a setting, use the **+** or **–** buttons to select the tyre then press and hold the **SET** button for three seconds. A double beep confirms the ID has been deleted.

8. When all sensors are registered, press and hold the **CODE** button to exit.

Note: If a sensor is coded twice to the same monitor, the previous setting will be deleted automatically.

4.2 Alternative registration by proximity (Low Frequency)

This procedure can be used to register the sensors without installing them on the vehicle.

1. In standby mode, press and hold the **CODE** button for 3 seconds. Release it after the beep to enter coding mode.

2. Press the **+** or **–** button to select the desired tyre position.

3. Press the **CODE** button again to enter Low Frequency mode. The display shows a flashing tyre icon and **LF** together with the letters **Id**.

4. Place the sensor close to the monitor and press the **CODE** button once more. The **LF** icon flashes and the red light shows on the monitor.

5. On receiving the code, the monitor gives a long beep and the tyre position is stored together with the sensor ID. The tyre icon continues to flash after the code is received.

6. If the monitor does not receive the code within 6 seconds, an error message **ERR** is displayed, a double beep is given and the red light goes out. Move the sensor closer to the monitor and repeat steps 4 and 5.

7. Press **+** or **–** buttons to select the other tyres and repeat for all the tyres that are to be monitored.

8. When all sensors are registered, press and hold the **CODE** button to exit.

4.3 Alternative registration by direct input of code

1. In standby mode, press and hold the **CODE** button for 6 seconds and release it after the second beep (Do not release it after the first beep).

2. Press the **+** or **–** button to select the desired tyre position.

3. Press the **CODE** button to scroll through each digit code and then use the **+** or **-** buttons to change the value of each digit.

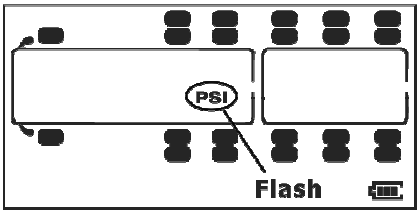
4. Press the **SET** button to save the ID code

5. When all sensors are registered, press and hold the **CODE** button to exit.

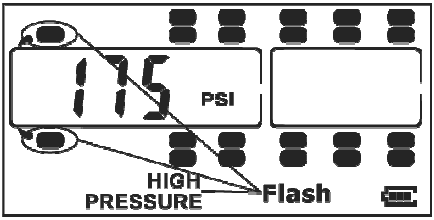
4.4 Set units of pressure and alert levels

This procedure automatically moves on to the next setting as you set the display units, high and low pressure alert levels and temperature alert level. Pressure alerts are set individually for each of the three axles on the towing vehicle (tractor) while the trailer settings apply to all axles on the trailer. The temperature alert level applies to all tyres.

1. In standby mode, press and hold the **SET** button for 3 seconds. Release after the beep. Press the **SET** button repeatedly to scroll through the different settings and press the **+** or **–** buttons to adjust the setting as follows:
2. **Pressure units:** while the PSI or BAR icon is flashing, press the **+** or **–** button to select the desired units. Then press **SET** to move on to set temperature units.



3. **Temperature units:** while the °C or °F is flashing, press the **+** or **–** buttons to select and press **SET** again to move on to set the high pressure alert level for the first axle.
4. **First axle pressure alert levels:** Press + or – to adjust the setting, then press **SET** to move on to set the low pressure alert for this axle.



Please note: The factory set low pressure alert level is 100psi. If you want a lower level, set the low pressure alert levels first, then cycle though again to set the high pressure alerts, as the system will not allow the high pressure alert to be less than the low pressure alert.

5. Continue to cycle through high and low pressure settings for the three axles on the tractor unit and all three axles on the trailer.
6. **High temperature alert for all wheels:** Press + or – to adjust the setting as required. The factory setting of 70°C is suitable for most applications.
7. Press and hold the **SET** button for three seconds to save the settings and exit the settings mode. If no action is taken for 1 minute, the system will return to standby mode without making any changes.

The alert levels can be adjusted at any time using this procedure, for example if different pressures are required when not towing a trailer. The new settings take immediate effect.

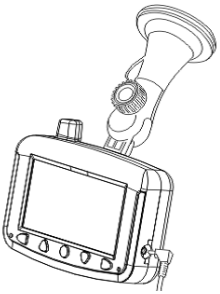
4.5 Install the monitor

Various fixing options are available for the monitor. Make sure it does not obstruct the driver's view when installed.

Windscreen mount:

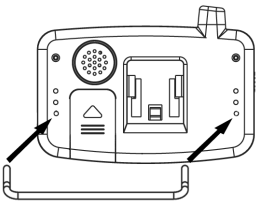
Clip the monitor to the holder, moisten the suction pad and press it to the windscreen. Lower the lever to secure the pad to the windscreen.

To remove it, lift the lever to break the suction, or unclip the monitor from the holder.



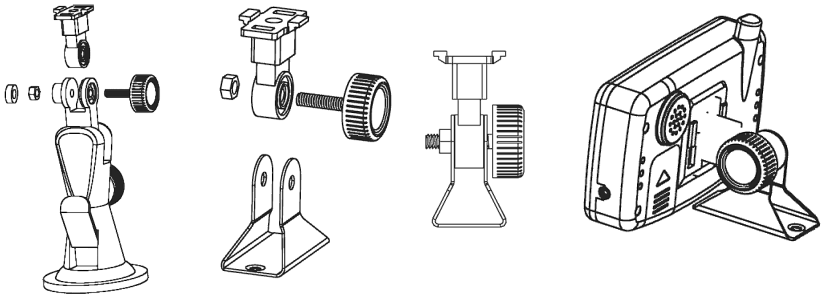
Free standing:

Fit the monitor stand in the holes in the back of the monitor and position it where it can be seen. Note that the stand is a tight fit in the holes.



Screw mount:

The monitor mount can be permanently fixed to the vehicle with the bracket. Dismantle the suction holder and re-assemble it with the metal bracket in place of the suction cup. Click the monitor into position. If required it can be unclipped for removal.



4.6 Connect the power

Connect the monitor to the vehicle power supply (12V or 24V) via the power adapter or using the hard wired cable (red wire to **+** positive, black to **-** negative). It operates on a rechargeable battery for about 60 hours on a full charge.

5. OPERATION

In normal operation the monitor continuously scrolls through and displays the pressure and temperature of the tyres one by one. You can manually scroll through to any particular tyre by using the + or - buttons. The system is accurate to 0.1bar (1.5psi), so a difference of one or two psi between the tyres can safely be ignored.

The sensors check the pressure and temperature every six seconds. If the pressure is falling, data is transmitted to the monitor immediately, but if the pressure is steady, data is transmitted only every five minutes. This is to reduce power consumption and extend the life of the sensor batteries.

If a sensor battery is low, or if a signal is not received from a sensor for a period of 60 minutes, an alert is issued.

5.1 Sleep mode

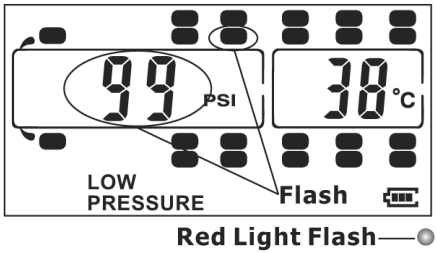
The monitor has a built in motion sensor that shuts it down into a sleep mode after about ten minutes of no movement so it does not normally need to be turned off. Any vibration like opening the vehicle door wakes it up again. In the sleep mode, the system continues to check pressures once every hour, so that warning of any problem such as a slow puncture overnight can be given to the driver as soon as it wakes up.

If the vehicle is to be unused for some time, we recommend turning the monitor off to prevent battery drain.

5.2 Alerts

If there is a leak or if any tyre is outside the pre-defined values, it gives an alert:

- An audible alarm
- A flashing red light
- A flashing tyre icon that identifies the tyre
- A description of the problem



Press any button to switch the alarm off. The red light will continue to flash until the problem is corrected.

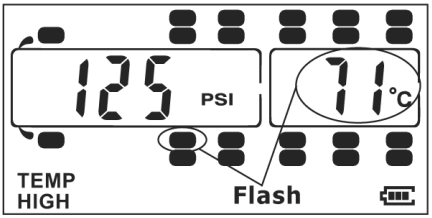
The following messages may appear

HIGH PRESSURE
LOW PRESSURE
HIGH TEMP
FAST LEAKAGE

The **FAST LEAKAGE** alert is a serious situation that could rapidly affect the stability of the vehicle. If this alert appears, pull over and investigate immediately.

The **HIGH TEMPERATURE** alert shows that the tyre is overheating.

If not corrected, this can cause permanent damage to the sidewall of the tyre and will potentially lead to a blowout or a fire.



Sensor battery alert:

When a sensor battery needs replacing, a low sensor battery icon is shown, and the appropriate tyre icon flashes.

Monitor battery alert:

When fully charged, the monitor battery will operate for 60 hours. When it needs charging, the monitor battery icon changes from full to part full. Connect the monitor to the vehicle power supply.

Fully charged | Requires charging

5.3 Backlight

The backlight turns on automatically when it gets dark if the vehicle is in motion. It turns off when it is light or when the monitor is in sleep mode. Press any button to turn the backlight on manually. To turn it off, press and hold the **+** button for 3 seconds.

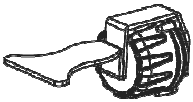
5.4 Connecting and disconnecting a trailer

When the trailer is not connected to the vehicle, press the **LINK** and **–** buttons at the same time. Trailer monitoring stops and the trailer tyre icons are removed from the display. When the trailer is reconnected, press **LINK** and **+** buttons to display the trailer.

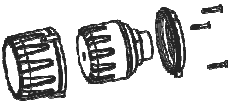
If you drive away from the trailer without unlinking the monitor, it will continue to show the last measured trailer tyre data for up to about 60 minutes. It will then give a short beep each time the alert and the trailer tyre position is accessed and stop displaying the tyre data.

5.5 Replacing sensor batteries

When the sensor low battery icon is showing and a corresponding tyre icon is flashing, the sensor battery needs to be replaced. The battery is a CR1632 lithium cell, which is available from TyrePal Ltd.

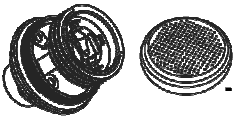


Use the tool to remove the sensor



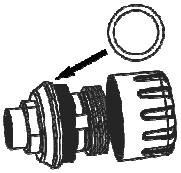
Use a cross head screwdriver to release the security cover

Use the tool to hold the sensor as the cover is removed

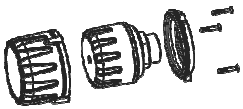


Take out the battery

Note polarity and fit the new battery



Fit a new O-ring



Re-assemble the sensor and cover

Re-fit the sensor

6. TESTING THE SETUP

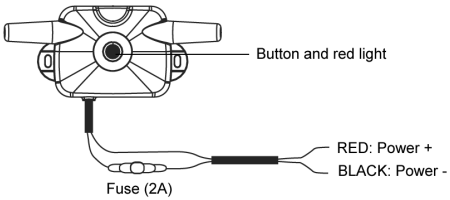
To test the system, position the monitor in the driver's cab and, using there supplied wrench, unscrew the furthest sensor. The system should produce an alert for that tyre position. Tighten the sensor and the alert should stop.

If the alert is not given, the sensor may be out of range. The sensors have a transmission range of about 20 metres in open air, but in practice, screening by the vehicle chassis and bodywork reduce the working distance to about 7 metres. This can be increased by using the optional Smart Transceiver.

7. SMART TRANSCEIVER (OPTIONAL EQUIPMENT)

The Smart Transceiver can either be used as a signal repeater to boost sensor signals from a single trailer, or in a fleet application, it can simplify exchanging trailers by storing the trailer settings. In this case, one is fitted to each trailer.

For rigid vehicles like motorhomes and buses, position the Transceiver near the back of the vehicle. For HGV trailers, position it near the front of the trailer, where it can be reached from outside the vehicle and with the antenna clear of metallic parts.



Fix it in place with screws through the lugs and connect it to the vehicle power supply (12 to 24V) with the red wire to **+** positive, and the black to **-** negative. The cable has an in-line 2A fuse.

7.1 Operation as a signal repeater

The Transceiver requires no programming to operate as a signal repeater. The red light stays on while power is connected and flashes while data is being transmitted or received.

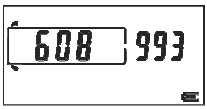
7.2 Operation for trailer exchange

Where multiple trailers are in use, a Smart Transceiver is fitted to each trailer. Each Transceiver is given its own ID and stores the trailer alert settings and sensor IDs.

7.2.1 Enter tractor and trailer IDs

1. In standby mode, press the **LINK** button on the monitor. A six digit ID is shown for the current tractor. Press the button again to see the six digit ID of the trailer.

Tractor ID 608993



Trailer ID 500393

2. Press the **LINK** button a 3rd time to enter tractor ID coding mode and a 4th time to enter trailer ID coding mode.

3. Press the + or - buttons to scroll through numbers and press the **CODE** button to set the digit and move on to the next digit.

4. Press and hold the CODE button for thee seconds to store the ID. If no action is taken, for one minute, the system returns to the standby mode without making any changes.

7.2.2 Code the Transceiver for trailer exchange

1. In standby mode, press and hold the **LINK** button on the monitor for 6 seconds and release it after the second beep to enter sending mode. (Do not release it after the first beep). A flashing **SEnd** is displayed on the monitor.

2. On the Transceiver, press and hold the button for 3 seconds until it beeps. The monitor sends the trailer ID, pressure and temperature alert levels and the sensor IDs to the Transceiver. On successful transmission, the monitor gives a long beep and shows the trailer ID and tyre icons.

3. On error, or if the communication is not completed within two minutes, the monitor gives a double beep and shows a flashing **FAIL** message.

4. Press any button or wait three minutes to return to standby mode.

Note: The transceiver can only store one set of data. Any previous data will be erased.

7.2.3 Exchanging a trailer

1. On the Transceiver, press and hold the button for 3 seconds until the second beep and the LED is lit.

2. On the Monitor, press and hold the **LINK** button for 3 seconds. All the tyre icons are displayed on the monitor with a flashing **ACCEPt** message. The monitor is now in the receiving ID mode.

3. The Transceiver sends the trailer alert settings, sensor IDs and current values to the monitor. On receiving the data, the monitor displays all the trailer tyre icons and the trailer ID. The trailer icon flashes for three minutes and then exits with the new trailer linked. To escape and cancel the operation, press any button within the three minutes.

4. On error, or if the communication is not completed within two minutes, a flashing **FAIL** message is shown on the monitor with the trailer tyre icons.

5. Press any button or wait 3 minutes to return to standby mode.

8. TROUBLESHOOTING AND ADDITIONAL INFORMATION

Additional information about the system, including detailed product specification, troubleshooting and advice on managing tyre pressures is provided on the TyrePal web site, www.tyrepal.co.uk, where it is regularly updated.

9. SERVICE AND WARRANTY

Please register your guarantee by completing details on our web site.

The system is warranted to be free from manufacturing defects and is guaranteed for a period of twelve months from date of purchase. There are no user-serviceable parts inside the monitor and if internal parts have been tampered with, the warranty may be void. The warranty does not affect your statutory rights.

10. SPECIFICATION SUMMARY

Specification is subject to change without notice.

Monitor

Dimensions	115 x 73 x 27mm, weight 132g.
Power	Powered by internal lithium battery recharged from vehicle power supply. Automatically shuts down when not in use and reactivates as vehicle is used. Charger input 12 to 24V dc.
Display	Clear LCD screen with automatic backlight. View size 80 x 40mm. Continuously cycles through all wheel positions and displays pressure and temperature for each tyre. Additional detail is displayed as required.
Alerts	Bright red flashing LED, plus audible alarm. Audible alarm can be silenced by pressing any button. Distinct alerts are given for the following conditions: Fast leakage (puncture or potential blowout) Pressure below user-set threshold Pressure above user-set threshold Temperature above user-set threshold Warnings are also given if the sensor signal is lost, if a sensor battery is low or when the monitor battery needs recharging.
Units	User selected. Pressure: Bar or psi, Temperature: °C or °F

Sensors

Dimensions	29.5 x 29.5mm (length x diameter), weight 19g, including battery and security shroud.
Power	Replaceable CR1632 cell, expected life up to 2 years
Pressure	0 to 13 bar ±0.1bar (0 to 188psi ±1.5psi)
Temperature	-40˚C to 80˚C ±3˚C
Transmission	433.92MHz, power <10dBm
Range	Typically >7m in vehicle when screened by bodywork etc. Range can be extended with a Smart Transceiver.

